

Operating Instructions

(UK)

ISDN Telephone System

tiptel 31 home



tiptel

The most important functions

The first telephone call

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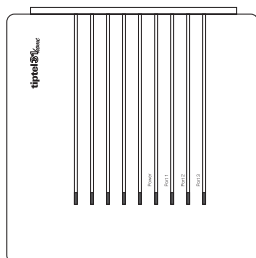
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General information

ISDN telephone system diagram



LED "POWER":

Blinks: power

Illuminated: ISDN ready

LED "Port 1, 2 and 3":

Blinks: internal telephone call

Illuminated: external telephone call

How to use the operating instructions

The following symbols are used in these operating instructions:



Pick-up handset



Dialling function codes and number sequences



Dialling telephone numbers or PIN



Recall button: Flash function for the execution of ISDN telephone system feature functions and programming of individual parameters



Replace handset



Hints

Scope of supply

The scope of supply comprises:

- ISDN Telephone System including AC adapter
- ISDN connecting cable and cable for the serial data transfer from/to the PC
- Operating instructions
- CD ROM

Special accessories

An uninterruptible power supply (UPS) unit is available as special accessory (see "Information on the proper operation and usage of the telephone system"). In addition, a remote beeper (order number 11 22 330) can be provided. This unit allows the remote change of telephone system features even via telephones which do not support DTMF (Dual Tone Multi Frequency = tone dialling).

General information

Information on the proper operation and usage of the telephone system

- In some specific frequency domains, a high electrical interference field strength may have an impact on the transfer quality of internal and/or external telephone communications - for the duration of the interference. The sort and the extent of the impact depends on the characteristics of the connected terminal equipment.
- The ISDN telephone system is designated for the operation at ISDN point-to-multipoint connections using the EURO ISDN DSS1 protocol. If you connect the device to other ports this may lead to disturbances and a trouble-free operation cannot be granted.
- The ISDN telephone system has been signed and manufactured in accordance with the safety standard EN 60950. You may only connect terminal equipment to the ISDN telephone system that fulfils this specific or a comparable safety standard.
- All installations must be done professionally. Ask a professional electrician to conduct the installation work at the 230 V network. VDE 0100 is to be considered.
- In the case of malfunction, unplug the AC Adapter as well as the ISDN connecting cables at the NT.
- The ISDN telephone system must not be installed and operated in the following inappropriate environments.
 - an installation outdoors
 - humid or damp rooms (bathroom, shower, swimming pools ...)
 - rooms with danger of explosions
 - exposure to direct sunlight
 - ambient temperatures of less than 0°C or more than 40°C
 - strong vibrations
 - dusty environments
- Please take care that the cables do not lead to any danger of stumbling. Avoid folding, pushing and pressing of the cables.
- **The telephone system cannot be operated during a power failure or when the AC adapter is unplugged.** When the device is without power supply, all programming parameters are retained and will be available again as soon as the power supply is resumed or after plugging the AC adapter again. An uninterruptible power supply unit is available as an accessory. During a power failure, this unit will allow the operability of the telephone system for several hours.

Ecological information

During normal use, you will not have any contact to substances damaging to your health. The synthetic material and plastics used for manufacturing this device exclusively consist of partially recycled granules.

Our packaging materials do not consist of plastics but of partially recycled cardboard and paper.

Introduction

What is the ISDN telephone system tiptel 31 home designed for?

Congratulations and many thanks for purchasing the ISDN telephone system tiptel 31 home. The telephone system serves as a linking element between your analog terminals - such as telephone, fax machine or modem - and the digital telephone network (ISDN). This allows the further usage of your existing analog terminal equipment - as those devices cannot be connected to the ISDN network directly.

Features of the ISDN telephone system

Hereinafter, you will find a list of the ISDN telephone system features. It is possible that not all of the listed features are released free of charge by your local telecommunications provider. Some of those may be subject to registration. General technical terms are indicated in brackets. You can take the corresponding explanations in chapter "Glossary".

- ISDN point-to-multipoint connection using EURO ISDN DSS1
- 3 ports for analog terminals
- Tone dialling and pulse dialling supported
- Calling line identification presentation or incoming calls at analog telephones (CLIP analogue)
- Flash technology, operating software can be updated
- 6 telephone numbers (MSNs) can be assigned
- Individual assignment of an MSN to a terminal (6 MSNs available)
- MSN for outgoing calls adjustable for each MSN
- Operating mode is indicated via LED
- Internal calls free of charge
- Charge pulse can be activated/deactivated per extension
- Programming of features is possible at each extension by entering the PIN
- 20 abbreviated numbers
- 20 restricted numbers
- Automatic access to public exchange programmable per extension
- Access authorisation programmable per extension (restricted authorisation, exchange authorisation, trunk calls, international calls)
- Activation/deactivation of call waiting signal for waiting incoming calls programmable per extension
- Do not disturb function
- Access to public exchange programmable as fax group 2/3 per extension
- Pick-up of incoming calls
- Internal manual call transfer with/without enquiry call
- Activation/deactivation of the call number display for outgoing calls (CLIP/CLIR) programmable per extension.

Introduction

- Activation/deactivation of the call number display for incoming calls (COLP/COLR) programmable per extension.
- Placing calls on hold in the exchange or within the telephone system
- Two-line operation with hold in the exchange or within the telephone system
- Three-party conference in the exchange or within the telephone system (via second B channel)
- Call forwarding within the exchange programmable per MSN: call forwarding unconditional (CFU), call forwarding on busy (CFB), call forwarding on no reply (CFNR).
- Call diversion programmable per MSN via second B channel
- Call forwarding to internal extension.
- Automatic call-back on busy (CCBS, i. e. completion of call to a busy subscriber)
- External call transfer within the exchange (ECT, i. e. Explicit Call Transfer)
- Replugging at the bus
- Intraoffice keypad information transfer or programming of service features within the exchange office.
- Activation/deactivation of least cost routing for the automatic selection of a telecommunications provider for outgoing calls - depending on date, time and target telephone number
 - is programmable per extension.

Declaration of conformity

TIPTTEL AG confirms that this product complies with the basic requirements of the European regulation 1999/5/EG.

You will find further information under the following internet address:

<http://www.tiptel.com>

Initial operation - step by step

 It is important to unplug the AC adapter as well as the ISDN connecting cable before taking out installation tasks at the internal line network. The installation must be done professionally.

Step 1: Installing the device (wall mounting)

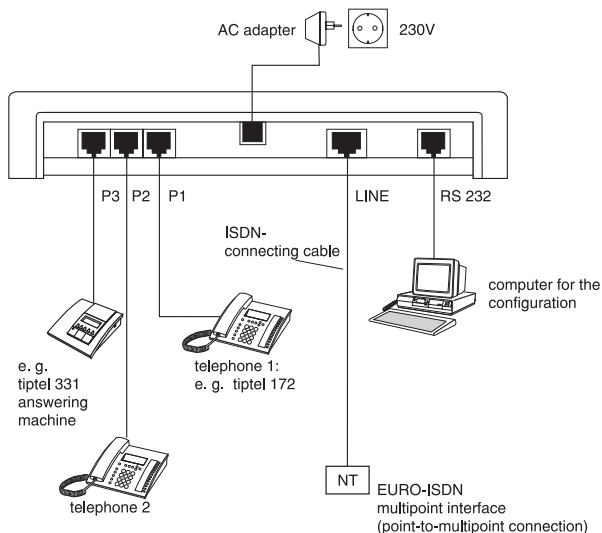
The ISDN telephone system has to be installed in a dry room with an ambient temperature range between 0°C and 40°C. The telephone system can be used as a table-top or a wall mounted model.

Follow the steps below for wall mounting:

1. For wall mounting, the telephone system must be positioned in a way that the ports of the device are not on the top, but on the bottom side. On a horizontal line, place two marks with a distance of 11.8 cm on the wall.
2. Drill two 6 mm holes into the wall and plug the holes with the dowels. Be careful not to drill into an electrical supply network or water pipe.
3. Screw in the screws in a way that the screw head has a distance of about 5 mm from the wall.
4. Hook the telephone system into the screw holes.

Step 2: Connecting the terminal equipment

1. Connect the terminals e. g. as shown in the following diagram.



Initial operation - step by step

Step 2: Connecting the terminal equipment (continued)

Analog telephones with pulse or tone dialling can be connected to the ISDN telephone system. The dialling mode is recognised automatically. For telephones with specific plugs an individual adapter may be required.

If you connect telephones with charge counter, a charge pulse can be assigned to the corresponding telephones. Here, the exchange office has to transfer the incurring charges during the conversation (AOCD*, advice of charge during the call). If necessary, this feature has to be applied for at your local telecommunications provider.

The ISDN telephone system supports the analog feature CLIP internally. This feature allows to display the caller's telephone number, provided that your terminal is adequately equipped.



At some telephones, the earth button has no function for the ISDN telephone system. A flash button ( -button) is required for enquiry calls, placing calls on hold as well as for programming the telephone settings. The duration of the flash pulse should be 70...100 ms.

Step 3: Connecting the ISDN telephone system to the ISDN network

1. Plug the ISDN connecting line in the "LINE" jack of the ISDN telephone system. Afterwards, plug the other end of the line in the NT (network termination which is provided by your telecommunications provider). You can operate your ISDN telephone system at any Euro ISDN multipoint interface.

The ISDN telephone system is not fed via the NT. Thus, the NT does not need to be connected to the 230V network in order to operate the telephone system.

2. Plug the AC adapter in the 230V power outlet. The LED "Power" blinks. After some seconds, i. e. when the ISDN access is ready - this LED is lit permanently.

After picking up the handset of a connected telephone, you will hear the ISDN telephone system's dialling tone (interrupted dialling tone). After dialling "0" you will hear the exchange dialling tone (continuous dialling tone). If a B channel is occupied, the corresponding LED - "Port 1", "Port 2" or "Port 3" is lit.

The basic installation work is now complete.

You are now able to make outgoing telephone calls. A ringing signal is heard for all incoming telephone calls. The ISDN telephone system reacts on all incoming calls and all connected terminals will ring. For detailed information on how to determine specific terminal equipment (extension numbers) for incoming calls, continue as described under point 4 and 5.

Initial operation - step by step

Step 4: Entering MSNs (optional)

If you enter multiple subscriber numbers (MSNs) in your telephone system, the individual MSNs can be addressed separately and selectively. As soon as one or more MSNs are entered, only the telephone system terminals with the entered MSNs will ring in the case of an incoming call. Up to 6 MSNs can be entered. As for the entry, the MSNs are addressed by an index.



The entry of a multiple subscriber number - with 20 digits as a maximum - is not mandatory for the operation of the ISDN telephone system. You can enter the MSNs at any time.

MSNs are entered as follows:

1. Pick-up the hand-set.	2. Dial code number for programming.	3. Enter the PIN (4 digits).	4. Dial code number for MSN entry.	5. Enter MSN index number.
	9		1	1, 2, 3, 4, 5 or 6
You hear the dialling tone		You hear the programming tone.		
6. Enter MSN.	7. Press FLASH.	8. Replace the hand-set.		
	R			
	You hear the confirmation tone.	Entry complete.		

Example: Enter MSN 670327 as first MSN (while pre-set PIN is 1234):



9 1 2 3 4 1 1 6 7 0 3 2 7 R



If you want to enter further MSNs, repeat step 4 to 7 (for each MSN) and replace the handset afterwards.

Initial operation - step by step

Step 5: Designated ringing signal for individual terminals in the case of incoming calls

If the connected terminals shall react selectively to a specific MSN, this must be determined as follows.

The assignment of extensions to the MSNs is done as follows:

1. Pick-up the hand-set.	2. Dial code number for programming.	3. Enter the PIN (4 digits).	4. Dial code number for assignment to the extension.	5. Enter extension number.
	9		2	
You hear the dialling tone.		You hear the programming tone.		
6. Enter the MSN index number.	7. Press FLASH.	8. Replace the hand-set.		
1, 2, 3, 4, 5 6 (not limited to one digit)	R			
	You hear the confirmation tone.	Entry complete		

Example: If there is an incoming call for the first MSN, only the telephone at extension 1 shall ring:



Example: If there is an incoming call for the second MSN, the fax machine at extension 2 shall answer the call:



Internal telephone calls

Step 5: Designated ringing signal for individual terminals in the case of incoming calls (continued)

 If you connect a fax machine, the function "automatic access to the public exchange" and "access to the public exchange with bearer capability fax group 2/3" will be very useful (see "Configuration via telephone").

Example: If there is an incoming call for the third or fourth MSN, the telephone at extension 3 shall ring:

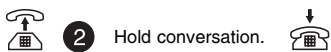


Internal dialling

You can make internal calls as follows:

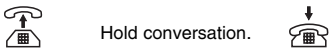
1. Pick-up the hand-set.	2. Dial internal extension number.	3. Hold the conversation.	4. Replace the hand-set.	
	Dial 1, 2 or 3.			
You hear the dialling tone.	You either hear the ringing tone or the busy tone.	You are connected with the internal subscriber.	Call is terminated.	

Example: Subscriber 3 wants to hold a telephone conversation with subscriber 2:



Incoming internal call

If there is an incoming internal call, the telephone will ring with the specific internal ringing signal.



External telephone calls

Access to public exchange and dialling

Make external telephone calls as follows:

1. Pick-up the hand-set.	2. Dial code number for access to public exchange.	3. Dial telephone number.	4. Hold conversation	5. Replace the hand-set.
				
You hear the dialling tone.	You hear the exchange dialling tone.	You either hear the ringing tone or the busy tone.	You are connected with the external subscriber.	Call is terminated.

Example: Call external subscriber with telephone number 424502:



After dialling the telephone number, you will either hear the ringing tone or the busy tone. Your own telephone number is presented (CLIP).

You also have the option to deactivate this function (see chapter "Configuration via telephone").

The feature "CLIP" (presentation) or "CLIR" (restriction) can only be applied if it is supported by your ISDN connection.

 The ISDN telephone system automatically occupies a free B channel for an external call. If both of the B channels are already occupied or if your extension is not authorised, you will hear the busy tone.

External telephone calls

Incoming external call

If there is an incoming external call, the telephone will ring with the specific external ringing signal.



Hold conversation.



Placing an external call on hold to make enquiries

You can place an external call on hold. While the external caller is placed on hold, you can make an enquiry in the room or you can make an enquiry call to another internal extension. The party placed on hold cannot hear the enquiry.



Should your ISDN access not support the feature "HOLD", you may set up the ISDN telephone system in a way that external calls are not held within the exchange but within the ISDN telephone system itself (factory pre-set: HOLD within exchange). If the handset is replaced while a call is on hold, the connection in question will be terminated.

Example: You are holding an external call and want to place it on hold.

In order to make an enquiry in the room, press **R** (call is placed on hold).

In order to make an enquiry call to internal extension 2, press **2**.

In order to get reconnected to the party placed on hold, press **R** again.

Two-line operation with hold (external calls)

If there is a second incoming external call while you already hold a conversation with an external party, a call waiting signal is heard. In such cases you have the possibility to place the first external call on hold and to answer the second incoming call.

Example: You are holding an external call and want to place it on hold in order to answer a second incoming call.

Press **R R**. The first call is placed on hold and you are connected to the second party.

When pressing **R R** again, you can resume the first call while the second party is placed on hold. You can switch between the two calls by pressing **R R** again (two-line operation with hold).

External telephone calls

Ending two-line operation with hold (external calls)

By pressing **[R]**, the active call is placed on hold. You can end this call by pressing **[8] [6]**. After pressing **[R]**, you will be reconnected to the other external party.

Manual call transfer (incoming external call to internal extension)

Incoming external calls can be transferred to an internal subscriber:

1. Press FLASH.	2. Call internal subscriber.	3. Hold conversation.	4. Replace the handset.	
	Dial 1, 2 or 3			
The external call is placed on hold.	You hear the ringing tone.	Conversation with internal subscriber.	Call is being transferred to internal subscriber.	

Example: Extension 2 holds an external call and wants to transfer it to extension 1.

Subscriber at extension 2: **[R]** **[1]**

Hold conversation with subscriber at extension 1.

Subscriber at extension 2  **and the external call is transferred to the subscriber at extension 1.**



If extension 1 is busy, you hear the busy tone. In this case, you can resume the external call by pressing **[R] [R]**. You can then inform the calling party that it is not possible to transfer the call.
As for manual call transfer, it is not necessary to wait until the desired internal party answers the call. You may also replace the handset after dialling the internal telephone number.

Dialling via LCR

When making telephone calls via different telecommunications providers, no special handling is required. Further information can be taken from chapter "Least Cost Routing (LCR)".

Feature functions

Call pick-up

If there is an incoming call at another extension, you have the option to pick this call up as follows:



You are then connected to the external caller.

Conference call with two external parties

When you are having a two-line operation with hold with two external parties, you also have the option to initiate a conference call with these two parties.

Example: Subscriber at extension 2 holds a two-line operation with hold with two external parties and intends to initiate a conference call. One of the external calls is on hold. Subscriber at extension 2 speaks to the second external party.

After pressing **R** , the active call is placed on hold.

Press **8 1** to start the conference.

If one of the external parties replaces the handset, the conversation with the other external party can be continued. Should your ISDN access not support the feature "HOLD" or "Three-Party Conference", you can set up your telephone system in a way that external calls and conference calls can be placed on hold within the telephone system (pre-set: Conference within the Exchange). In such cases, a second B channel is occupied.

Explicit call transfer (ECT)

The ISDN telephone system supports the ISDN feature ECT allowing to connect two external calls within the exchange - as far as your telecommunications provider supports this function.

Example: You have an active external telephone conversation while another external call is placed on hold within the exchange office. You wish to establish a communication between these two parties.

Press **R** to place the two external calls on hold.

Now, press **7 3** in order to connect the two parties within the exchange. You hear the busy tone. Replace the handset.

Should this function fail, you can resume the external calls by pressing **R** .

Feature functions

Do not disturb function

The do not disturb function can be activated or deactivated for each extension. If the do not disturb function is active, the telephone will not ring if there is an incoming call (pre-set: Do not disturb OFF).

Do not disturb function ON/OFF:

1. Pick-up the handset.	2. Dial function code for do not disturb function.	3. Do not disturb function ON = 1 or off = 0.	4. Replace the handset.	
				
You hear the dialling tone.		You hear the confirmation tone.	The do not disturb function is activated for incoming internal and external calls.	

Rejecting a party issuing a call waiting signal

If there is a second incoming call while you are already holding a telephone conversation, a call waiting signal is heard through the handset. You have the option to reject a party issuing a call waiting signal by dialling    . Resume the original conversation by pressing  .

Call forwarding within the telephone system

The ISDN telephone system offers the option to forward incoming calls to another telephone. Here, internal call forwarding and external call forwarding are differentiated.

In the case of an internal call forwarding, you forward incoming calls for your extension to another internal subscriber.

In the case of an external call forwarding, incoming calls for a specific MSN are forwarded to an external subscriber number. In such cases, the MSN to be forwarded as well as the external target telephone number for the call forwarding have to be indicated.



In the case of an external call diversion, both of the B channels are occupied. When you use the external call forwarding function, please be aware that you have to bear the costs incurring for the connection from your telephone to the target subscriber number for the call forwarding. The calling party only has to bear the costs incurring for the connection up to your original extension.

Feature functions

Internal call forwarding ON/OFF

Set up an internal call forwarding as follows:

1. Pick-up the hand-set.	2. Dial function code for internal call forwarding.	3. Dial the target extension number for the internal call forwarding.	4. Replace the hand-set.	
		1, 2 or 3		
You hear the dialling tone.		You hear the confirmation tone.	The internal call forwarding is active.	

Example: Subscriber at extension 1 wants to forward incoming calls for his extension to subscriber at extension 2



The call forwarding is active for the extension at which you enter the function.

In order to deactivate the call forwarding, follow the above steps apart from step 3. At step 3, dial  .

Feature functions

External call forwarding ON/OFF

Set up an external call forwarding as follows:

1. Pick-up the hand- set.	2. Dial function code for external call diversion.	3. Dial MSN index number.	4. Dial target telepho- ne number for the external call forwarding.	5. Press FLASH.
	  	1, 2, 3, 4, 5 or 6		
You hear the dialling tone.				You hear the confir- mation tone.
6. Replace the hand- set.				
				
The external call diversion is active. When you pick-up the handset now, you will hear a spe- cial dialling tone.				

 The length of the target telephone number to be programmed for the external call forwarding function is limited to 20 digits. The external call forwarding function can only be used if MSNs have been entered in the ISDN telephone system before.

In order to deactivate the external call forwarding, follow the above steps but leave out step 4 (dialling the target telephone number).

Feature functions

Call forwarding

The ISDN telephone system supports the ISDN feature Call Forwarding. When the call forwarding is active, all incoming calls are forwarded to an external destination number that you programmed earlier.

There are three different types of call forwarding:

Call forwarding unconditional (CFU):

Any incoming call is directly forwarded to the programmed subscriber number.

Call forwarding on no reply (CFNR):

If an incoming call is not answered within 15 seconds, it will be forwarded to the programmed subscriber number.

Call forwarding on busy (CFB):

Incoming calls are forwarded to the programmed subscriber number if the called party is busy.



The call forwarding function needs to be released by your telecommunications provider. Please be aware that you have to bear the costs incurring for the connection from your telephone to the target subscriber number programmed. The calling party only has to bear the costs incurring for the connection up to your original extension. The activated call forwarding function may be indicated by a special dialling tone. Possibly, the confirmation tone is heard with a delay.

Feature functions

Call forwarding unconditional, on busy, on no reply ON/OFF

The call forwarding for an MSN can be activated as follows:

1. Pick-up the hand-set.	2. Dial function code for call forwarding.	3. Dial MSN index number.	4. Enter desired type of call forwarding 0, 1 or 2.	5. Dial target subscriber number for call forwarding.
	  	1, 2, 3, 4, 5 or 6	 /  / 	
You hear the dialling tone.				
6. Press FLASH.	7. Replace the hand-set.			
				
You hear the confirmation tone.	The call forwarding function is activated.			

The type of call forwarding in step 4 is:

- 0: call forwarding unconditional
- 1: call forwarding on busy
- 2: call forwarding on no reply

Example: At MSN 1, activate "call forwarding on no reply" to the target telephone number 454443:



The active call forwarding function, here e. g. "call forwarding on no reply", can be deactivated by just leaving out the target telephone number.



Feature functions

Call deflection (CD)

In principle, the call deflection function corresponds to the call forwarding. As for call forwarding, the incoming call is transferred automatically via the exchange office. In the case of call deflection, the telephone system initiates the call transfer. If there is an incoming call for the MSN for which CD is activated, the telephone system transfers corresponding commands to the exchange office. The call is then transferred to the programmed target telephone number via the exchange office.



Possibly, the call deflection feature has to be released by your local telecommunications provider. Should the telephone system have been disconnected from the ISDN access temporarily, the CD feature cannot be executed anymore.

You can activate the call deflection function as follows:

1. Pick-up the hand-set.	2. Dial function code for call deflection.	3. Dial MSN index number.	4. Dial target subscriber number.	5. Press FLASH.
		1, 2, 3, 4, 5 or 6		
You hear the dialling tone.				You hear the confirmation tone.
6. Replace the hand-set.				
The call deflection function is activated.				

Example: At MSN 1, activate "call deflection" to the target telephone number 454443:



The active call deflection function can be deactivated by just leaving out the target telephone number.

Feature functions

Automatic call-back on busy (CCBS = completion of call to busy subscriber)

The ISDN telephone system supports the ISDN feature "automatic call-back on busy" (CCBS). If you make an external call and the target subscriber is busy, you can request an automatic call-back via the exchange office - informing you on when the desired subscriber is free again. Then, pick up the handset and the subscriber will be called back automatically.



The feature CCBS must be released by your telecommunications provider and by the telecommunications provider of the target subscriber. If the connection to the target subscriber cannot be established by the exchange office within 45 seconds, the call-back request will be deleted automatically.

Example: You hear the busy tone after dialling the target subscriber number and want to initiate an automatic call-back



As soon as the target subscriber has replaced the handset, your telephone will ring. Now, pick up the handset. You hear the ringing tone and the target subscriber is called.

Call parking in the exchange office

The telephone system allows to park a call in the exchange office. You can resume a parked call in another room at another ISDN telephone which is linked to the same ISDN access.

In order to park a call, dial function code **7 0** and afterwards a two-digit number combination in a range from **0 0** to **9 9**.



The feature can only be executed if no other external calls exist at the same time.

Example: You answer an incoming call and want to continue the conversation via an ISDN telephone. You can park the call by dialling e. g. 48.

Resume a parked call at an ISDN telephone:

Follow the procedure for call parking. Afterwards, dial **4 8** and resume the call.

Resume a parked call at the telephone system:

Dial **7 1 4 8** to resume the call and continue you telephone conversation.

Feature functions

Keypad protocol

Some exchange offices use the "keypad protocol" to program features (e. g. call forwarding). Here, keypad information are sent with reference to an MSN to be indicated.

The following signs which can be transferred to the exchange office for keypad control are 0 1 2 3 4 5 6 7 8 9 as well as * and # .

The exact number sequences and thus the programming parameters within the exchange office are informed by your telecommunications provider.

In principle, sending keypad information is executed as follows:

1. Pick-up the hand-set.	2. Dial function code for keypad function.	3. Dial MSN index number.	4. Dial keypad numbers.	5. Replace the hand-set.
		1, 2, 3, 4, 5 or 6		
You hear the dialling tone.		You hear the internal dialling tone. The keypad mode is active.		The entry is complete.

Example: At extension 2, the information #21*33146# shall be sent to MSN 5 via the keypad function.



Abbreviated dialling

You can store up to 20 frequently used telephone numbers with a maximum of 20 digits each as abbreviated numbers. These abbreviated numbers are directly accessible for each subscriber. You can initiate a call to a subscriber number stored in the call number memory by dialling function code * 8 2 and the corresponding abbreviated number, i. e. 0 0 to 1 9 (see also chapter "Storing and erasing abbreviated numbers").

Example: The subscriber at extension 1 wants to call the external subscriber number 0123-45678. This telephone number is stored under the abbreviated number 11.



The desired external party is called.

Configuration via telephone

Accessing the programming parameters

The parameters of the ISDN telephone system can be adapted to the user requirements:

1. Comfortably, via the Windows software from the scope of supply (recommended, see "Telephone system configuration via Windows software").
2. Via a terminal program (recommended for PCs with non-Windows operating system, see "Telephone system configuration via terminal program").
3. Via a connected telephone from each extension.

Hereinafter, the configuration via telephone is described.

All programming parameters are retained in the case of a power failure (230V). A special access number (PIN) is required to access the programming level. **In the factory pre-set, the PIN is 1234. You may change the PIN at any time.**

You can access the programming level as follows:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Dial corresponding function code.	5. Programming.
				
You hear the dialling tone.		You hear the programming tone.		
6. Replace the hand-set.				
				
Entry complete.				

Hereinafter, the configuration options for the telephone system are described in detail.



When you do not replace the handset after an individual programming step, you may continue programming another parameter. You will hear the confirmation tone after successfully completing an individual programming step. Otherwise, you will hear the error tone.

Configuration via telephone

Change PIN (password)

The PIN is required to access the configuration and programming level. The factory pre-set is 1234. You may change the PIN to any desired 4 digit number code as follows:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter old PIN (4 digits).	4. Dial function code for change of PIN.	5. Enter new PIN (4 digits).
			 	
You hear the dialling		You hear the programming tone.		
6. Press FLASH.	7. Replace the hand-set.			
				
	Entry complete.			

Example: The current PIN 2345 shall be changed to 9992.



Should you have made a wrong entry while entering the new PIN as under point 5, just replace the handset and repeat the process.

Please make sure to remember the new PIN. Any configuration or programming option of the telephone system is only possible after entering the PIN.

Configuration via telephone

Set-up date and time

The telephone system has an in-built clock. The date and time is required for Least Cost Routing (LCR) and it is automatically received from the ISDN during outgoing calls. Should date and time not be received, this can be set-up manually.

When entering date and time, please stick to the following format:

DDMMYY: DD = day (2 digits), MM = month (2 digits), YY = year (2 digits).

So, if you intend to set the date to 7th August 1999 (07.08.99): 070899

The two digits for the range of the year YY = 00...95 cover the period 2000...2095

HHMM: HH = hours (two digits), MM = minute (two digits).

For 23:06 hrs. e. g. 2306.

1. Pick-up the handset.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Dial function code for "date/time change".	5. Enter new date/time.
	9		7 7 7 8	DD MM YY / SS MM
You hear the dialling tone.		You hear the programming tone.		
6. Press FLASH.	7. Replace the handset.			
R				
	Entry complete.			

The entry for date and time is selected as follows (step 4):

77: Date

78: Time

Example: The date shall be set to 5th December 1999 (05.12.99). The PIN is 1234.

 **9 1 2 3 4 7 7 0 5 1 2 9 9 R** 

Example: The time shall be set to 14:10 hrs. The PIN is 1234.

 **9 1 2 3 4 7 8 1 4 1 0 R** 

Configuration via telephone

Blocking the reception of date and time

The telephone system has an in-built clock. The date and time is required for Least Cost Routing (LCR) and it is automatically received from the ISDN during outgoing calls.

If you do not wish to receive date and time out of the ISDN, you can block the reception of these data.

Proceed as follows to block or release the reception of date and time:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Dial function code for reception of date and time.	5. Reception out of:
			 	0 = ISDN blocked 1 = ISDN released
You hear the dialling tone.		You hear the programming tone.		
6. Press FLASH.	7. Replace the hand-set.			
				
	Entry complete.			

Example: Date and time shall not be received out of the ISDN (PIN from the factory pre-set is 1234).



Configuration via telephone

Entering MSNs (multiple subscriber numbers)

You can store up to 6 multiple subscriber numbers in the telephone system. Each of the MSNs may have a length of 20 digits as a maximum. If no MSN is stored in the ISDN telephone system, the telephone system will react to all incoming calls. If at least one MSN is stored, the ISDN telephone system will only react to incoming calls for this specific MSN. When entering the MSNs, those are addressed by an index number.



Entered MSNs have to be assigned to the individual extensions (see " Assigning MSNs to the individual extensions") so that there will be a ringing signal for incoming calls.

Proceed as follows to enter MSNs:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Dial function code for MSN entry.	5. Enter MSN index.
	9		1	1, 2, 3, 4, 5 or 6
You hear the dialing tone.		You hear the programming tone.		

6. Enter telephone number (MSN).	7. Press FLASH.	8. Replace the hand-set.		
	R			
		You hear the confirmation tone. Entry complete.		

Example: MSN 670237 shall be stored as first MSN. The PIN from the factory pre-set is 1234.



Configuration via telephone

Deleting MSNs

In order to delete an already entered MSN, follow the procedure of MSN entry - but without entering an MSN.

Example: MSN 1 shall be deleted. The PIN from the factory pre-set is 1234.



Assigning MSNs to the individual extensions

You can assign up to 6 MSNs to an extension. When there is an incoming external call, all extensions to which the called MSN is assigned will ring.

Proceed as follows to assign MSNs to extensions:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Dial function code for MSN assignment.	5. Enter extension.
	9		2	1, 2 or 3
You hear the dialling tone.		You hear the programming tone.		

6. Enter index of the MSN.	7. Press FLASH.	8. Replace the hand-set.		
1, 2, 3, 4, 5, 6 (You can also enter more than one number.)	R			
	You hear the dialling tone.	You hear the confirmation tone. Entry complete.		

Example: In the case of an incoming call for the first or third MSN, extension 2 shall ring. The PIN from the factory pre-set is 1234.



Configuration via telephone

"Call holding" and "three-party conference" within the exchange/ "call holding" within the telephone system

Should your ISDN access provide the feature "call holding"/"three-party conference" within the exchange, you can configure the ISDN telephone system in a way that the feature "holding external call within the exchange" is used. Should your ISDN access not support this feature, you can place external calls on hold within the telephone system.

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Dial function code for "call holding".	5. Enter type of call holding.
	9		1 7	0 / 1
You hear the dialling tone.		You hear the programming tone.		0 = within the telephone system 1 = within the exchange
6. Press FLASH.	7. Replace the hand-set.			
				
You hear the confirmation tone.	Entry complete.			

Example: The ISDN feature "HOLD" within the exchange shall be used. This allows you to have a two-line operation with hold with two external parties or to hold a conference call - where only one B channel is occupied. The PIN is set to 1234.



Configuration via telephone

Access to the public exchange

The access to public exchange authorises the user to make outgoing external calls. In the factory pre-set, all telephones have unrestricted access.

The access to the public exchange is set as follows:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter extension.	5. Enter type of access authorisation.
	9		4 7 / 4 8 / 4 9	
You hear the dialling tone.		You hear the programming tone.		
6. Press FLASH.	7. Replace the hand-set.			
R				
You hear the confirmation tone.	Entry complete.			

The type of access authorisation (step 5) is defined as follows:

0 access restricted, 1 access authorised (access with 0), 2 = trunk calls (00) authorised, 2 international calls (000) allowed (non-restricted, factory pre-set).

Entering the extension under step 4:

- 47 extension 1
- 48 extension 2
- 49 extension 3

Example: Access to the public exchange shall be restricted for extension 2. The PIN is set to 1234.



Example: Extension 3 shall be restricted for international calls. The PIN is set to 1234.



Configuration via telephone

Access to the public exchange with bearer capability FAX group 2/3 / telephone

If you connect a fax machine at one of the extensions, it is useful to make outgoing connections for this extension using the ISDN bearer capability "FAX group 2/3".

Proceed as follows to set the bearer capability:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for extension 1, 2 or 3.	5. Enter terminal type 1 = fax machine 0 = telephone
	9			
You hear the dialling tone.		You hear the programming tone.		

6. Press FLASH.	7. Replace the hand-set.			
				
You hear the confirmation tone.	Entry complete.			

In step 4, the extension is selected as follows:

- 37 extension 1
- 38 extension 2
- 39 extension 3

In step 5, you can switch between the functions fax operation (= 1) and telephone (3.1 kHz voice, = 0, pre-set). The function "call waiting" is deactivated when fax operation has been selected.

Example: Bearer capability fax group 2/3 shall be set for extension 3. The PIN is set to 1234.



Configuration via telephone

Automatic access to public exchange

You can program an automatic access to the public exchange for the internal extensions. In this case, the exchange dialling tone is heard directly after picking up the handset.

 This function is useful, e. g. if you connect a fax machine. Internal dialling is then possible after pressing the FLASH button.

Proceed as follows to se the automatic access to the public exchange:

1. Pick-up the hand- set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Dial function code for automatic access to public exchange.	5. Enter extension.
	9		4	1, 2 or 3
You hear the dial- ling tone.		You hear the pro- gramming tone.		
6. Enter code number for access 1 = ON or 0 = OFF.	7. Press FLASH.	8. Replace the hand- set.		
1 / 0	R			
		You hear the confir- mation tone. Entry complete.		

This function can be activated (= 1) or deactivated (= 0, factory pre-set) (step 6).

Example: The automatic access to public exchange shall be activated for a fax machine at extension 3. The PIN is set to 1234.



 Should both B channels be occupied, you will hear the busy tone after picking up the handset.

Configuration via telephone

External ringing signal ON/OFF

There is a specific ringing signal for incoming external calls. You have the option to deactivate the ringing signal for incoming external calls. In this case, you will not be able to answer incoming external calls.

Proceed as follows in order to set up the external ringing signal:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for extension 1, 2 or 3.	5. Enter parameter 1 = ON or 0 = OFF.
	9		5 4 / 5 5 / 5 6	1 / 0
You hear the dialing tone.		You hear the programming tone.		
6. Press FLASH.	7. Replace the hand-set.			
				
You hear the confirmation tone.	Entry complete.			

In step 4, the extension is selected as follows:

- 54 extension 1
- 55 extension 2
- 56 extension 3

The function can be activated (= 1, factory pre-set) or deactivated (= 0) (step 5).

Example: You intend to deactivate the external ringing signal for incoming calls for extension 2. The PIN is set to 1234.



It remains possible to answer incoming external calls by the call pick-up function or if a call is being transferred to the extension in question.

Configuration via telephone

Entering and deleting restricted numbers

The ISDN telephone system allows to enter up to 20 telephone numbers to be restricted via a restricted numbers list. Telephone numbers beginning with the same numbers as numbers in the restricted numbers list cannot be called (e. g. numbers beginning with 0190). You can consider free variable parameters (* button) which will stand for any number ranging from 0 to 9.

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for restricted numbers.	5. Enter restricted number index.
	9		1 8	00 ... 19
You hear the dialing tone.		You hear the programming tone.		

6. Enter restricted number.	7. Press FLASH.	8. Replace the hand-set.		
	R			
		You hear the confirmation tone. Entry complete.		



The maximum length of a restricted number is 20 digits. Here, you do not need to store the exchange identification code (0).

Example: Telephone numbers beginning with 0180... and 0190... shall be stored as restricted number 10. The PIN is set to 1234.



Erasing restricted numbers

In order to erase earlier programmed restricted numbers proceed as above leaving out step 6 (entry of restricted number).

Example: Restricted number 10 shall be erased. The PIN is set to 1234.



Configuration via telephone

Charge pulse

The exchange office transfers charging information which are converted to a 16 kHz charge pulse by the ISDN telephone system. Connected telephones can use the charge pulse to determine the charges incurring for calls (see also "Entering the charge factor" and operating instructions of the individual terminal equipment).



The telephones must be able to evaluate the charge pulse. Your ISDN access must provide charging information during the call (AOCD = advice of charge during a call). Then, you can have the costs incurring for outgoing calls displayed at your telephones.

Proceed as follows to set up the charging information:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for extension 1, 2 or 3.	5. Enter parameter 1 = ON or 0 = OFF.
	9		3 4 / 3 5 / 3 6	1 / 0
You hear the dialing tone.		You hear the programming tone.		
6. Press FLASH.	7. Replace the hand-set.			
You hear the confirmation tone.	Entry complete.			

In step 4, the extension is selected as follows:

- 34 extension 1
- 35 extension 2
- 36 extension 3

The function can be activated (= 1, factory pre-set) or deactivated (= 0) (step 5).

Example: The charge pulse shall be activated for the telephone at extension 1. The PIN is set to 1234.



9

1

2

3

4

3

4

1

R



Configuration via telephone

Entering the charge factor

Whether the incurring charges for outgoing calls are transferred as units or as a fixed amount mainly depends on your local telecommunications provider and the situation. If units are transferred, those can be directly converted to charge pulses by the telephone system. If amounts are transferred, the telephone system has to convert those in the corresponding number of charge pulses applying a charge factor (see also "Charge pulse").

The charge factor (costs incurring for a telephone unit) have to be made known to the telephone system as follows:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for charge factor.	5. Enter charge factor.
	9		2 8	B B B F F F
You hear the dialing tone.		You hear the programming tone.		
6. Press FLASH.	7. Replace the hand-set.			
				
You hear the confirmation tone.	Entry complete.			

The charge factor (factory pre-set: DM 0.121) must be indicated by 6 digits with 3 digits before the decimal point and 3 fractional digits:

BBBFFF (B = digits before the decimal point, F = fractional digits)

**Example: A charge factor of DM 0.121 shall be entered in the telephone system.
The PIN is set to be 1234.**



Configuration via telephone

Calling line identification presentation/restriction for outgoing calls (CLIP/CLIR)

As for outgoing external calls, you can transfer your own telephone number to the called party (CLIP) or restrict the transfer of the number (CLIR). The MSN you selected for outgoing external calls will be transferred to the called party when CLIP has been programmed.



In order to support the number transfer, your ISDN access must provide the feature CLIP/CLIR. If necessary, you have to ask your telecommunications provider to release the feature.
The available MSNs must have been entered in the ISDN telephone system (see "Entering multiple subscriber numbers").
Select the MSN to be transferred via "MSN assignment for the call number display for external calls".

Proceed as follows to transfer your number to the called party:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for call number transfer.	5. Enter extension.
	9		5	1, 2 or 3
You hear the dialling tone.		You hear the programming tone.		
6. Enter parameter 1 = CLIP 0 = CLIR	7. Press FLASH.	8. Replace the hand-set.		
1 0	R			
		You hear the confirmation tone. Entry complete.		

The function can be activated (= 1, CLIP: factory pre-set) or deactivated (= 0, CLIR) (step 6).

Example: No MSN shall be transferred for outgoing calls at extension 2. The PIN is set to 1234.



Configuration via telephone

Connected line identification presentation/restriction (COLP/COLR)

When you get an incoming call from an external party, you can determine whether your telephone number shall be transferred to the calling party (COLP) or not (COLR). When COLP is set, the calling party gets the MSN you selected for outgoing calls displayed at his/her telephone.



In order to support the number transfer, your ISDN access must provide the feature COLP/COLR. If necessary, you have to ask your telecommunications provider to release the feature.

The available MSNs must have been entered in the ISDN telephone system (see "Entering multiple subscriber numbers").

Select the MSN to be transferred via "MSN assignment for the call number display for external calls".

Proceed as follows to transfer your number to the called party:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for call number transfer.	5. Enter extension.
	9		6	1, 2 or 3
You hear the dialling tone.		You hear the programming tone.		

6. Enter parameter 1 = COLP 0 = COLR.	7. Press FLASH.	8. Replace the hand-set.		
1 / 0	R			
		You hear the confirmation tone. Entry complete.		

The function can be activated (= 1, COLP: factory pre-set) or deactivated (= 0, COLR) (step 6).

Example: Extension 2 shall not transfer the telephone number to the calling party. The PIN is set to 1234.



Configuration via telephone

CLIP at internal analog terminal equipment

It is possible to display the telephone number of a calling party at analog terminal equipment, if the connected terminal is suitably equipped (analog CLIP).



It is only possible to display the calling party's telephone number at analog terminals if:

1. CLIP (ISDN) on the calling party's side is active and supported.
2. CLIP analog is set in the ISDN telephone system - for the extension in question
3. the correct procedure (FSK, Frequency Shift Keying = modem transmission procedure or DTMF (Dual Tone Multi Frequency = tone dialling) has been selected to receive the telephone number (see next paragraph).
4. the terminal equipment can evaluate and display CLIP analog.

Proceed as follows to set the parameters for receiving telephone numbers:

1. Pick-up the handset.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for extension 1, 2 or 3.	5. Enter parameter 1 = ON 0 = OFF
				
You hear the dialling tone.		You hear the programming tone.		

6. Press FLASH.	7. Replace the handset.			
				
You hear the confirmation tone.	Entry complete.			

Configuration via telephone

CLIP at internal analog terminal equipment (continued)

In step 4, the extension is selected as follows:

- 24 extension 1
- 25 extension 2
- 26 extension 3

The function "CLIP analog" can be activated (= 1, number is displayed, factory pre-set) or deactivated (= 0) (step 5).

Example: CLIP analog shall be activated for extension 2. The PIN is set to 1234.



Configuration via telephone

Setting the procedure to receive call numbers at the internal analog terminals

The procedure for receiving telephone numbers at analog terminals is not standardised. The ISDN telephone system supports the DTMF (Dual Tone Multi Frequency = tone dialling) as well as the FSK procedure (FSK, Frequency Shift Keying = modem transmission procedure) for the number transfer.



Apart from the selection of the procedure to receive telephone numbers, the CLIP function must be activated (see "CLIP at internal analog terminal equipment").

Proceed as follows to set the CLIP analog transfer procedure:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for CLIP procedure.	5. Enter parameters 0 = FSK 1 = tone dialling
	9		2 7	0 / 1
You hear the dialling tone.		You hear the programming tone.		

6. Press FLASH.	7. Replace the hand-set.			
R				
You hear the confirmation tone.	Entry complete.			

The type of transfer procedure is FSK (= 0, factory pre-set) or DTMF (Dual Tone Multi Frequency = tone dialling) (=1) (step 5).

Example: FSK transfer shall be set for all extensions as the connected terminals can only display numbers using FSK transfer.



9 1 2 3 4 2 7 0 R



Configuration via telephone

MSN assignment for call number identification for external calls

You can store up to 6 multiple subscriber numbers (MSNs) in the telephone system (see "Entering multiple subscriber numbers (MSNs)").

The MSN to be displayed in the case of an external call can be set individually for each extension.



Telephone numbers (MSNs) are only transferred if CLIP and/or COLP has been activated (see " Connected line identification presentation/restriction (COLP/COLR)" and "Connected line identification presentation/restriction (COLP/COLR)". The available MSNs must have been entered in the ISDN telephone system earlier. Your ISDN access must support the feature for call number transfer.

Proceed as follows to select the MSNs to be transferred:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for call number transfer.	5. Enter extension.
				1, 2 or 3
You hear the dialing tone.		You hear the programming tone.		

6. Enter MSN index to be transferred.	7. Press FLASH.	8. Replace the hand-set.		
1, 2, 3, 4, 5 or 6				
	You hear the confirmation tone.	Entry complete.		

Example: Extension 2 shall transfer MSN 2 as telephone number. The PIN is set to 1234.



Configuration via telephone

Call waiting

When you are holding an internal or external call while there is another incoming call for you on that line, you will hear a call waiting signal. This is identified by a signal tone which is heard through the handset. You now have the option to answer the waiting call (two-line operation with hold / three-party conference).

Proceed as follows to set the call waiting function ON or OFF:

1. Pick-up the handset.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for extension 1, 2 or 3.	5. Enter parameters 1 = ON 0 = OFF
	9		4 4 / 4 5 / 4 6	1 / 0
You hear the dialing tone.		You hear the programming tone.		

6. Press FLASH.	7. Replace the handset.			
R				
You hear the confirmation tone.	Entry complete.			

In step 4, the extension is selected as follows:

- 44 extension 1
- 45 extension 2
- 46 extension 3

The function "call waiting" can be activated (= 1, factory pre-set) or deactivated (= 0) (step 5).

Example: The call waiting shall be deactivated for extension 2. The PIN is set to be 1234.



Configuration via telephone

Storing and erasing abbreviated numbers

The ISDN telephone system provides an abbreviated dialling memory in which you can store up to 20 telephone numbers (see also "Abbreviated dialling").

 When storing abbreviated numbers, make sure that you do not enter the exchange identification code (0). The length of abbreviated numbers is limited to 20 digits.

Proceed as follows to enter abbreviated numbers:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for abbreviated numbers.	5. Enter abbreviated number index.
				00...19
You hear the dialling tone.		You hear the programming tone.		

6. Enter telephone number.	7. Press FLASH.	8. Replace the hand-set.		
				
	You hear the confirmation tone.	Entry complete.		

Example: Telephone number 0123-7654 shall be stored as abbreviated number 10 (index of the abbreviated number). The PIN is set to 1234.

 Abbreviated numbers are erased when you do not enter a telephone number during the above procedure.

Example: You want to erase abbreviated number 10. The PIN is set to 1234.

Configuration via telephone

Resetting the telephone system (resume factory pre-set)

You may reset the telephone system, i. e. go back to the factory pre-set at any time.

Proceed as follows to reset the telephone system:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for reset.	5. Press FLASH.
				
You hear the dialing tone.		You hear the programming tone.		You hear the confirmation tone.
6. Replace the hand-set.				
				
Entry complete.				

Example: Resetting the telephone system while the PIN is set to 1234.



A factory pre-set overview can be found on page 62.

When resetting the telephone system, please be aware that the

- restricted numbers list
 - abbreviated dialling memory
 - stored MSNs
- are erased.

Least Cost Routing (LCR)

Set-up integrated Least Cost Router

You can save costs by selecting the most favourable telecommunications provider for your outgoing calls. You can determine the least expensive telecommunications provider under consideration of

- specific time
- working day or Saturday, Sunday, public holiday
- destination (tariff zone)

for the outgoing call you intend to make. You can then make the phone call via the selected (least expensive) provider by dialling the specific access number before dialling the actual telephone number of the target subscriber. This is the so-called call-by-call process.

The ISDN telephone system allows an automatic call by call. You can make your telephone calls as usual and the telephone system selects the cheapest provider automatically (LCR function).

The following prerequisites must be given in order to use the LCR function:

1. You must make your area code known to the telephone system (see "Entering the area code number for LCR function").
2. The LCR function must be activated for the extension(s) which shall use LCR (see "Activate/deactivate LCR function for each individual extension").
3. The telephone system's LCR data must be updated regularly so that the data are always up-to-date. This is possible via the Windows software from the scope of supply (see online help function for the software) or per telephone call to an update server. (See "LCR upgrade per telephone via update server").

Least Cost Routing (LCR)

Entering the area code for LCR function

You need to enter your area code into the telephone system before you can use the LCR function.

This is done as follows:

1. Pick-up the handset.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for area code.	5. Enter area code.
			 	
You hear the dialing tone.		You hear the programming tone.		You hear the confirmation tone.
6. Press FLASH.	7. Replace the handset.			
				
You hear the confirmation tone.	Entry complete.			

Example: Area code 02102 shall be entered in the telephone system. The PIN is set to 1234.



Please see also paragraph "LCR upgrade per telephone via update server"

Least Cost Routing (LCR)

Activate/deactivate LCR function for each individual extension

You can activate the LCR function as follows:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for extension 1, 2, or 3.	5. Enter LCR parameter.
	9		5 7 / 5 8 / 5 9	1 / 0
You hear the dialing tone.		You hear the programming tone.		
6. Press FLASH.	7. Replace the hand-set.			
				
You hear the confirmation tone.	Entry complete.			

In step 4, the extension is selected as follows:

- 57 extension 1
- 58 extension 2
- 59 extension 3

The LCR function can be activated (= 1) or deactivated (= 0, factory pre-set) (step 5).

Example: You want to activate the LCR function for extension 1. The PIN is set to 1234.



Remote change

You can change the settings for call transfer or call deflection (CD) remotely via a telephone or a remote beeper supporting tone dialling (remote change).

Prior to a remote operation, you must activate the remote change function. When activating the remote change function, you must indicate an MSN that is entered in the telephone system. You may call the telephone system later using this MSN and conduct changes for the call transfer, call diversion and call deflection. The MSN determined for remote change can only be used for remote change of the telephone system as far as the function is active.

Activate/deactivate the remote change function

You can activate the remote change function as follows:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for remote change.	5. Enter MSN index.
	9		9 7	1, 2, 3, 4, 5 or 6
You hear the dialling tone.		You hear the programming tone.		
6. Press FLASH.	7. Replace the hand-set.			
				
You hear the confirmation tone.	Entry complete.			

Example: Remote change shall be made possible via the first MSN. The PIN is set to 1234:



Remote change is deactivated if you do not enter the MSN index in step 5:



Remote change

Remote change of call forwarding and call deflection

If you want to make remote changes for the call forwarding or call deflection, just call the ISDN telephone system using the MSN for which remote change had been activated and dial the following numbers:

1. Pick-up the hand-set.	2. Dial MSN for which remote change is possible.	3. Enter function code for remote change.	4. Enter PIN (4 digits).	5. Enter function code for the desired remote change operation CD, call forwarding
				
You hear the dialling tone.	The telephone system answers the call.		You hear the programming tone.	

6. Enter MSN index.	7. Only in the case of call forwarding. Enter type of call forwarding.	8. Enter target telephone number.	9. Press # .	10. Replace the hand-set.
1, 2, 3, 4, 5 or 6	0 = unconditional 1 = on busy 2 = on no reply			
			You hear the confirmation tone.	Entry complete.

The function code for the remote change functions are as follows (step 5)

- Call deflection: 75 (leave out step 7)
- Call forwarding: 84 (step 7 must be followed)
- Call forwarding: 85 (leave out step 7)

 The remote change option must be activated so that you can conduct remote changes. Possibly, the feature call forwarding need to be released by your telecommunications provider. Only conduct step 7 if call forwarding is the function to be changed.

Remote change

Example: You are currently working in your office where your telephone number is 987654 and you are awaiting an important private telephone call. This is why you want to program a call forwarding from your private telephone number, i. e. 321123 which is stored as the 1st MSN in the ISDN telephone system - to your business telephone number.

In order to do this, you activate an unconditional call forwarding in the exchange office. Then, call your ISDN telephone system using the MSN with which remote change is possible, e. g. 321124.



3 2 1 1 2 4

(= telephone number allowing remote change)

Your ISDN telephone system answers the call. You hear the confirmation tone and now have 30 seconds time to initiate the programming of the call forwarding function as follows:

8 0 1 2 3 4

(= function code for remote change + PIN)

You hear the programming tone. When dialling the numbers or function codes for call forwarding, make sure that there is no pause exceeding 30 seconds between pressing the individual buttons:

8 4 1 0 9 8 7 6 5 4 # 

(= function code for remote change of call forwarding + selection of the 1st MSN + call forwarding unconditional + telephone number)

Now, incoming calls for MSN 321123 are forwarded to the telephone number 987654 via the exchange office.



Should you hear an error tone in step 9 - instead of a confirmation tone - the function could not be programmed.

In order to deactivate the call forwarding or call deflection, follow the above procedure without entering the target telephone number (step 8).

Configuration via computer

Define serial protocol for data transfer

The serial telephone system protocol supports two different types of operation:
- operation using the Windows software CD-ROM in the scope of supply (factory pre-set)
- operation using a terminal program.

If you want to use a terminal program for the operation, the serial telephone system protocol needs to be adapted.

This can be done as follows:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for protocol.	5. Enter protocol type.
	9		2 9	0 = terminal program or 1 = Windows software
You hear the dialling tone.		You hear the programming tone.		
6. Press the recall button.	7. Replace the hand-set.			
R				
You hear the confirmation tone.	Entry complete.			

Make the following entry in order to configure the telephone system via the terminal program (in the factory pre-set, the PIN is 1234):



Configuration via computer

Telephone system configuration via Windows software

The configuration of the ISDN telephone system via the Windows software which comes with the device is far more comfortable than the configuration via telephone. By the software, the ISDN telephone system functionality can be enhanced considerably, e. g.:

- Overview and change of each extension's settings on-screen.
- Printing the telephone system's settings
- Loading and storing the telephone system's settings
- Quick entry of MSN, restricted numbers and abbreviated numbers
- Management of LCR information and software update

The software provides an online help function (operating instructions for the program) which can be called by pressing the <F1> key. Help is then offered for the screen that is currently used.

Installing the Windows software

You must install the Windows software from the CD-ROM (scope of supply) in order to use the functionality. For reference, please see the installation guide from the scope of supply.

Your computer must meet the following requirements for installation and operation of the software:

IBM-compatible PC with:

- CD-ROM drive
- at least 12 MB free hard disk capacity
- a free serial port (COM port)
- Windows 95 / WIN98® or WIN NT® 4.0 (Service Pack 4 recommended)
- Screen resolution: 640x480, 800x600 or higher

Connecting the computer to the telephone system

Plug the serial data transfer cable from the scope of supply in the "RS 232" jack of your ISDN telephone system. The other end of the cable must be plugged in a free serial COM port of your PC. Should you only have a free 25-pin port at your PC, you can use a customary adapter (9-pin <-> 25-pin). Please see also chapter "Define serial protocol for data transfer".

Software update via Windows software

You can update the telephone system operating software using the Windows software. For reference, please see the Windows software online help.



During data transfer, you cannot make or receive telephone calls and the AC adapter must not be unplugged.

Configuration via computer

Telephone system configuration via terminal program

Should your computer not meet the requirements for the Windows configuration software, you also have the option to program the telephone system via a terminal program. As standard terminal programs exist for different computer platforms, you can use other computers to configure your telephone system - with corresponding adapters for the serial interface.

Preparing the configuration via terminal program

IBM-compatible computer:

You need a free serial port (COM1 ... COM 4) at your IBM-compatible PC and a standard terminal program under DOS or Windows.

Plug the serial data transfer cable from the scope of supply in the "RS 232" jack of your ISDN telephone system. The other end of the cable must be plugged in a free serial COM port of your PC. Should you only have a free 25-pin port at your PC, you can use a customary adapter (9-pin <> 25-pin).

Other computers:

Please contact your authorised dealer to get details on usable adapters and the terminal program.

Prepare terminal program:

Take out the following configuration steps for the terminal program:

- 9600 bps
- 8 bit
- no parity
- 1 stop bit
- select interface to which the ISDN telephone system is connected
- select direct circuit
- emulation: ANSI Terminal, echo off

Please see also chapter "Define serial protocol for data transfer".

Configuration via computer

Operation (navigation) within the terminal program

On your computer keyboard, press the space bar while the terminal program is running. The terminal program screen shows the message:

PIN/Password: _____

Enter the 4-digit PIN (in the factory pre-set, the PIN is 1234)

The main menu is displayed.

You can go to the corresponding sub-menu by entering the number which is shown before the menu item. If you change any settings within a sub-menu. Those changes will be transferred to the telephone system immediately. In the menus, you can navigate as follows:

Key	Field	Result
space	given text	Change programming parameters/settings
return	linked fields	Take over programming parameters/settings and move to the next field
0 ... 9	underscored (dotted line) fields	Entry of telephone numbers
backspace	underscored (dotted line) fields	Correction of the last entered character
9	selection _____	One menu level higher or main menu

Always up-to-date

Software upgrade per telephone via update server

You can regularly update the telephone system's operating software via update server. Updated software versions will be stored and provided on the server.

To get the latest software version transferred to your ISDN telephone system, call the server (from your telephone system) to initialise the software update. As a prerequisite, you must be authorised to conduct a software update.

Please note: This service is only available if supported by your local tiptel distributor.

Proceed as follows to update the operation software:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for software update.	5. Dial TIPTEL server telephone number.
				
You hear the dialling tone.		You hear the programming tone.		

6. Press FLASH	7. Replace the hand-set.	8. Optical indicator during data transfer.	9. Data transfer successful.	10. Optical indicator after completion of data transfer.
				
	Data transfer is initiated.	LED port 1-3 blinks.	Data transfer complete.	LED "Power" is lit, other LEDs off.



During data transfer, you cannot make or receive telephone calls and the AC adapter must not be unplugged. The data transfer process takes several minutes.

Always up-to-date

LCR upgrade per telephone via LCR Server

You can regularly update the ISDN telephone system's LCR data via an update server. If occasion requires, updated LCR data will be stored and provided on the update server.

To get the latest LCR data transferred to your ISDN telephone system, call the server (from your telephone system) to initialise the data transfer. As a prerequisite, you must be authorised to download new LCR data from the server. In addition, this transaction necessitates that your area code had been entered in your telephone system before establishing the first communication with the LCR server (see "Set-up integrated Least Cost Router" and "Entering the area code for LCR function")

Please note: This service is only available if supported by your local tiptel distributor. It also depends on the availability of network providers offering the „call-by-call“ service in your country.

Proceed as follows to update the LCR data:

1. Pick-up the hand-set.	2. Dial function code for programming.	3. Enter PIN (4 digits).	4. Enter function code for LCR update.	5. Dial server telephone number.
			 	
You hear the dialling tone.		You hear the programming tone.		
6. Press FLASH	7. Replace the hand-set.	8. Optical indicator during data transfer.	9. Data transfer successful.	10. Optical indicator after completion of data transfer.
				
	Data transfer is initiated.	LED port 1-3 blinks.	Data transfer complete.	LED "Power" is lit, other LEDs off.



During data transfer, you cannot make or receive telephone calls and the AC adapter must not be unplugged. The update process takes several minutes.

Appendix

Troubleshooting

Please check whether there is a malfunction of the ISDN telephone system or whether the ISDN access failed.

A malfunction of the ISDN telephone system may exist if other devices work without problems at the same ISDN access. In this case, use the following table for troubleshooting.

Description of the problem:

You do not hear a dialling tone after having picked up the handset.

- Power failure
- AC adapter is not plugged in
- Defective telephone plug
- Defective telephone
- Trouble with the telephone system programming

Possible solution:

Check whether the power outlet supplies electricity (e. g. by plugging in a lamp)
Plug in AC adapter
Check the telephone connection, check installation
Check telephone at another extension
Unplug AC adapter and re-plug again afterwards, set factory pre-set

You do not receive internal calls

- Do not disturb function activated
- Call forwarding function activated
- AC adapter is not plugged in
- Defective telephone plug
- Defective telephone
- Trouble with the telephone system's programming

Deactivate do not disturb function
Deactivate call forwarding function
Plug in AC adapter
Check the telephone connection, check installation
Check telephone at another extension
Unplug AC adapter and re-plug again afterwards, set factory pre-set

You do not receive external calls

- Same reasons as for no internal calls
- S₀ connection cable not plugged in
- External ringing signal set OFF
- Call forwarding function activated (special dialling tone can be heard after dialling the exchange identification code)

Same solutions as for no internal calls
Re-plug the S₀ connection cable in NT
Activate external ringing signal (external ringing signal ON)
Deactivate call forwarding function

Should the above actions not lead to a proper function of the telephone system, please take into account: never to open or connect a defective telephone system. If the malfunction persists, bring the device to your dealer or service centre. Keep the original packaging in case you need to send the device back.

Appendix

Overview of tone and ringing signals

Dialling tone (internal)



Busytone



Internal ringing signal



External ringing signal



Programming tone



Confirmation tone



Errortone



Appendix

Factory pre-set overview

When the ISDN telephone system is supplied, it comes with the following factory pre-set:

- No MSN stored
- All extensions ring in the case of incoming external calls
- All extensions authorised to access the public exchange
- Automatic access to the public exchange OFF
- Call number transfer for incoming and outgoing external calls (CLIP/COLP)
- CLIP analog ON
- Call number reception at analog terminals via FSK procedure
- No restricted numbers stored
- No abbreviated numbers stored
- Do not disturb function OFF
- Call waiting function active
- All extensions set to bearer capability "VOICE" for telephone operation
- Charge pulse active for all extensions
- Charge factor is DM 0.121
- Call holding and conference call within the exchange
- LCR deactivated for all extensions
- Receiving of date and time out of the ISDN
- Remote change not active
- Password (PIN) for programming individual features: 1234
- Telephone system set to operation using Windows® software

Cleaning and maintenance

The ISDN telephone system is maintenance-free. Clean the housing surface with a soft slightly moist cloth or use an anti-static cloth.

Never use a dry cloth (electric static could lead to an electronic defect). Do not use abrasive liquids or chemicals to clean the device.

Appendix

Glossary

Access to the public exchange/access code number	Button sequence by which you will get access to the public exchange (normally "0").
AOCD (advice of charge during call)	Advice of charge during the call and at the end of the call. EURO ISDN feature.
AOCE (advice of charge at the end of the call)	Advice of charge at the end of the call. EURO ISDN feature.
Automatic call-back on busy	See CCBS
B channel	An ISDN basic access includes 2 B channels which serve as channels for voice and data transfer.
Call-by-call	Individual selection of a telecommunications provider before making a telephone call.
Call forwarding (internal/external) within system	Within the telephone system, incoming calls can be forwarded to an internal or an external extension. In the case of an external call forwarding, both of the B channels are occupied.
Call forwarding (CFU, CFB, CFNR) within exchange	Within the exchange office, calls can be forwarded to another extension. There are three different sorts of call forwarding: call forwarding unconditional (CFU), on busy (CFB) and on no reply (CFNR).
Call waiting	Signal tone heard through the handset initiated by an additional caller who wants to speak to you although your line is busy as you are holding another telephone conversation.
CCBS	Automatic call-back on busy. The exchange office initiates the call-back automatically as soon as the earlier called subscriber is no longer busy.
CLIP	Abbreviation for "calling line identification presentation", i. e. transmission of the caller's telephone number to the called party.

Appendix

Glossary

CLIR	Abbreviation for "calling line identification restriction", i. e. restriction of the transmission of the own telephone number.
COLP	Abbreviation for "connected line identification presentation", i. e. transmission of the telephone number to the calling party.
COLR	Abbreviation for "connected line identification restriction", i. e. restriction of the transmission of the caller's telephone number.
DTMF	Abbreviation for Dual Tone Multi Frequency = internationally applied tone dialling method where the dialling signals are transferred as a combination of two tones (sometimes also mentioned as tone dialling).
Euro ISDN	The European ISDN standard (Integrated Services Digital Network). This telephone network is provided by your telecommunications provider.
Flash	A pulse with a duration of 70...100 milliseconds which is used as a signal for completion of a programming step within the telephone system. The flash pulse is also used for telephone functions, such as two-line operation with hold, placing calls on hold....
ISDN basic access	The ISDN basic access contains two B channels (user channels) and one D channel (control channel).
LCR	Abbreviation for Least Cost Router (searches the cheapest option for a telephone call).
MSN	Multiple subscriber number. For a basic access in a point-to-multipoint connection, up to 10 telephone numbers can be assigned variably. The number assignment to the specific terminal equipment has to be programmed by the user.

Appendix

Glossary

NT (Network Termination)	Network termination, where the connection line of the network provider ends and the house installation begins.
PIN	Abbreviation for Personal Identification Number. Serves to protect against unauthorised programming of your telephone system.
Prefix number for a telecommunications provider	The prefix number is a 5 to 6-digit access number which is assigned to a telephone company. This number is dialled before dialling the target subscriber number. All access numbers begin with 010...,
Remote change	Remote ON or remote change of the call forwarding or a call transfer via a telephone call to a specific MSN.
Signalling key	Special key, mostly named "R" (recall) button. A signal function (earth or flash) is triggered off when pressing this button.
Tariff zone	Area code number in which a fixed tariff structure exists, e. g. 0 = domestic, 00 = international, 017 = net for mobile phones etc.
Telephone network provider	Telecommunications company providing the telephone network.
Telephone number restriction	See CLIP/CLIR and COLP/COLR.
Three-party conference	Three parties are combined to a conference call.
Two-line operation with hold	Having a two-line operation with hold allows you to switch between two existing calls where one party is placed on hold and cannot listen to the conversation.
Western connector	Connector developed by the US telecommunications company Western - Bell which is used for telecommunications applications. The connector is available in different sizes (international designation RJ45 or FCC68).

Appendix

Technical data

ISDN access

S₀ basis access (EURO ISDN) DSS1 (EURO ISDN) point-to-connection

Approval number by the Federal Telecommunications Authority

CE 0197X

Line circuits

Analog ports	3
Supply voltage	42V DC
Supply current	25 mA + 20%
Call voltage	52 V +/- 10%, 50 Hz
Tones	440 Hz
Charge pulse	16 kHz
Number of internal calls	1
Internal tone	tone/pause: 0.6 s/0.3s/0.6s/3s
Dialling tone	tone/pause: 0.3s/0.24s/1.2s/0.66s
Busy tone	tone/pause: 0.25s/0.25s
Flash identification	from 70 ms to 100 ms
Reach of wires for 0,4 mm/0,6 mm/0,8 mm	200 m/450 m/800 m

Dialling mode

pulse dialling or tone dialling

Power supply

Voltage	230 V + 6% / - 10%, 50 Hz
Power consumption	19 VA
Fuses	thermo: 130 ° C / fine: 100 mA, T

Serial interface

Standard RS 232C, V. 24, 9600 bits/s, 8 N 1

Dimensions

L x W x H (measured in mm)	167 x 170 x 36
Weight	830 g
Housing material	ABS
Length of main circuit cable	1.5 m
Length of ISDN connection cable	3 m
Length of the serial connection cable	3 m

Temperature range

Operation	0 °C up to + 40 °C
Storage	- 20 °C up to + 70 °C

Numbering scheme

Function codes

Code	Function
9 PIN	Activate entry option
10 area code R	Dial area code
	Complete entry by replacing the handset
11 MSN R	Dial 1, without MSN = erase
12 MSN R	Dial 2, without MSN = erase
13 MSN R	Dial 3, without MSN = erase
14 MSN R	Dial 4, without MSN = erase
15 MSN R	Dial 5, without MSN = erase
16 MSN R	Dial 6, without MSN = erase
17 (0...1) R	Hold 0 = internal (second B channel), 1 = exchange
18 (00...19) R	restricted number R Enter restricted number 00...19 (without exchange identification code - 0)
19 (00...19) R	tel. number R Enter abbreviated number 00...19 (without exchange identification code - 0)
20 Server tel. number R	Flash - ROM update start
21 (1...6) R	Assign MSN to extension 1, up to 6
22 (1...6) R	Assign MSN to extension 2, up to 6
23 (1...6) R	Assign MSN to extension 3, up to 6
24 (0...1) R	CLIP analog ON for extension 1 (1)/OFF (0)
25 (0...1) R	CLIP analog ON for extension 2 (1)/OFF (0)
26 (0...1) R	CLIP analog ON for extension 3 (1)/OFF (0)
27 (0...1) R	CLIP analog type FSK (0) or DTMF (1)
28 (BBB FFF) R	Charge factor (B = digits before the decimal point, F = fractional digits)
29 (0...1) R	Serial protocol 0 = ANSI terminal 1 = Windows software
31 (1...6) R	Assign outgoing MSN for extension 1
32 (1...6) R	Assign outgoing MSN for extension 2
33 (1...6) R	Assign outgoing MSN for extension 3
34 (0...1) R	Charge pulse for extension 1 ON (1)/OFF (0)
35 (0...1) R	Charge pulse for extension 2 ON (1)/OFF (0)
36 (0...1) R	Charge pulse for extension 3 ON (1)/OFF (0)
37 (0...1) R	Apply bearer capability 3.1 kHz voice (=0), fax group 2/3 (=1) at extension 1
38 (0...1) R	Apply bearer capability 3.1 kHz voice (=0), fax group 2/3 (=1) at extension 2

Numbering scheme

Function codes

Code	Function
39 (0...1) R	Apply bearer capability 3.1 kHz voice (=0), fax group 2/3 (=1) at extension 3
41 (0...1) R	Automatic access to public exchange ON (1) for extension 1/OFF (0)
42 (0...1) R	Automatic access to public exchange ON (1) for extension 2/OFF (0)
43 (0...1) R	Automatic access to public exchange ON (1) for extension 3/OFF (0)
44 (0...1) R	Call waiting authorisation ON (1) at extension 1/OFF (0)
45 (0...1) R	Call waiting authorisation ON (1) at extension 2/OFF (0)
46 (0...1) R	Call waiting authorisation ON (1) at extension 3/OFF (0)
47 (0...3) R	Access authorisation for external lines at extension 1 0 = restricted 1 = public exchange (0) 2 = trunk calls (00) 3 = international calls (000)
48 (0...3) R	Access authorisation for external lines at extension 2
49 (0...3) R	Access authorisation for external lines at extension 3
51 (0...1) R	CLIP (ISDN) ON (1) at extension 1/OFF (0)
52 (0...1) R	CLIP (ISDN) ON (1) at extension 2/OFF (0)
53 (0...1) R	CLIP (ISDN) ON (1) at extension 3/OFF (0)
54 (0...1) R	External ringing signal ON (1) at extension 1 / OFF (0)
55 (0...1) R	External ringing signal ON (1) at extension 2 / OFF (0)
56 (0...1) R	External ringing signal ON (1) at extension 3 / OFF (0)
61 (0...1) R	COLP (ISDN) ON (1) at extension 1/OFF (0)
62 (0...1) R	COLP (ISDN) ON (1) at extension 2/OFF (0)
63 (0...1) R	COLP (ISDN) ON (1) at extension 3/OFF (0)
69 server tel. number R	Start LCR update
77 DDMMYY R	Enter date, DD = day, MM = month, YY = year
78 HHMM R	enter time, HH = hour, MM = minute
79 (0...1) R	Receiving date and time: 0 = receiving date/time out of the ISDN restricted, 1 = receiving date/time out of the ISDN released 79R no reception
98 R	Resume factory pre-set
99 PIN_NEW R	enter new PIN code

Numbering scheme

Special functions

Remote change:

Code	Function
80 (PIN) 75 (1...6) TTNO #	Automatic call deflection (TTNO = target telephone number) Without TTNO = deactivation
80 (PIN) 84 (1...6)(0..2) TTNO #	Program call forwarding (ISDN) for MSN 1...6 (TTNO = target telephone number)Type of call forwarding: 0 = unconditional 1 = on busy 2 = on no reply Without TTNO = deactivation
80 (PIN) 85 (1...6) TTNO #	Program call diversion via second B channel for MSN 1...6 (TTNO = target telephone number) Without TTNO = deactivation
97 (1...6) R	Remote change mode via MSN 1...0 ON 97R deactivates the remote change mode

During an external telephone conversation:

Code	Function
R	Switch to internal dialling (An active connection may be placed on hold in the exchange or it may be disconnected during connection set-up or tear down.)
LCR:	
57 (1..0) R	LCR function for extension 1 ON (1/OFF (0)
58 (1..0) R	LCR function for extension 2 ON (1/OFF (0)
59 (1..0) R	LCR function for extension 3 ON (1/OFF (0)

Numbering scheme

Internal state (handset picked up, internal dialling tone)

Code	Function
1	Internal call to extension 1
2	Internal call to extension 2
3	Internal call to extension 3
70 (00...99)	Parking a held connection with code (00...99)
71	Resume a parked call with code (00...99)
72	Activate keypad mode for MSN (1...6)
73	Explicit call transfer
*75 (1...6) TTNO R	Call deflection to target telephone number (TTNO) for MSN 1...6
*80 (0...1)	Do not disturb function ON (1) / OFF (0)
81	Switch three-party conference
*82 (0...19)	Execute abbreviated dialling 00...19
*83	Call pick-up
*84 (1...6) (0...2)	Program call forwarding (ISDN) for MSN 1...6
TTNO R	Type of call forwarding: 0 = unconditional 1 = on busy 2 = on no reply Without TTNO = deactivation
*85 (1...6) TTNO R	Program call diversion via second B channel for MSN 1...6 Without TTNO = deactivation
86	Disconnect call placed on hold last
87	Disconnect party initiating a call waiting signal
88	Trigger off CCBS (automatic call-back on busy)
*89 (0...3)	Program internal call diversion: 0 = OFF 1...3 = call diversion to extension 1...3

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